

cofc



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of: Hanan Kupferman  
Patent No.: 7,027,257 B1  
Issue Date: 04/11/2006  
For: DISK DRIVE HAVING A DISK  
INCLUDING A SERVO BURST PATTERN  
IN WHICH A PHASE DIFFERENCE  
BETWEEN RADIALLY ADJACENT SERVO  
BURSTS IS LESS THAN 180 DEGREES

Serial No.: 10/816,683  
Filing Date: 04/01/2004  
Examiner: Jason C. Olson  
Docket No.: K35A1407

**REQUEST FOR CERTIFICATE OF CORRECTION  
PURSUANT TO 35 U.S.C. §254 and 37 C.F.R. §1.322**

ATTN: Certificate of Correction Branch  
Commissioner for Patents  
P.O. Box 1450  
Arlington, VA 22313-1450

*Certificate  
SEP 29 2006  
of Correction*

Dear Sir/Madam:

The following errors were noted in the above-referenced patent. Applicant hereby requests that the Commissioner issue a Certificate of Correction, without charge. The following correction(s) and change(s) were made by way of amendment(s) during prosecution of the application. However, these changes are not reflected in the issued patent.

**In the Claims: (see Exhibit A)**

Column 7, Line 61 (*Amendment filed October 27, 2005, page 2, Claim 1*):

Please delete "a" after "and a disk wherein the disk has a plurality of".

A Certificate of Correction (PTO/SB/44) is enclosed. No fee is believed to be due. However, the Commissioner is hereby authorized to charge payment of any required fees associated with this communication or credit any overpayment to Deposit Account No. 23-1209.

Respectfully submitted,

Date: September 22, 2006

By:   
Jonathan E. Prejean, Esq.  
Reg. No. 52,132

WESTERN DIGITAL TECHNOLOGIES, INC.  
20511 Lake Forest Drive  
Lake Forest, CA 92630  
Tel.: (949) 672-7322  
Fax: (949) 672-6604

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO. : 7,027,257 B1

Page 1 of 1

APPLICATION NO.: 10/816,683

ISSUE DATE : 04/11/2006

INVENTOR(S) : Hanan Kupferman

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 7, Line 61: after "and a disk wherein the disk has a plurality of" delete "a".  
(Claim 1, line 2)

**MAILING ADDRESS OF SENDER (Please do not use customer number below):**

WESTERN DIGITAL TECHNOLOGIES, INC.

Attn: Docketing, Location E118-G

20511 Lake Forest Drive

Lake Forest, CA 92630

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

OCT 03 2006

## **EXHIBIT A**

(Copy of amendment filed October 27, 2005)



# COPY

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of: Kupferman

Art Unit: 2651

Serial No.: 10/816,683

Examiner: Olson, Jason C.

Filing Date: 04/01/2004

Confirmation No.: 1623

For: DISK DRIVE HAVING A DISK  
INCLUDING A SERVO BURST PATTERN  
IN WHICH A PHASE DIFFERENCE  
BETWEEN RADIALLY ADJACENT SERVO  
BURSTS IS LESS THAN 180 DEGREES

Docket No.: K35A1407

### RESPONSE TO NON-FINAL OFFICE ACTION OF 05/27/2005

MAIL STOP AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the non-final Office Action mailed on 05/27/2005 for the above-identified patent application, please consider the following amendments and/or remarks.

Amendments to the **Claims** are reflected in the listing of claims that begins on page 2 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently amended) A disk drive having a sampled servo system controller and a disk wherein the disk has a plurality of a plurality servo burst fields, the plurality of servo burst fields comprising:
  - a first normal burst field;
  - a first quadrature burst field, a portion of the first quadrature burst field being circumferentially contiguous with the first normal burst field and spanning a portion of a radial extent of the first normal burst field;
  - a second normal burst field, the second normal burst field being radially aligned with and away from the first normal burst field, the second normal burst field spanning a portion of a radial extent of the first quadrature burst field, and
  - a second quadrature burst field, the second quadrature burst field being radially aligned with and away from the first quadrature burst field, the second quadrature burst field spanning a portion of a radial extent of the second normal burst field,wherein the first normal burst field and the first quadrature burst field have a same first phase, the second normal burst field and the second first quadrature burst field have a same second phase, a difference between the first phase and the second phase is less than 180 degrees.
2. (Original) The disk drive of claim 1, wherein the disk defines a plurality of tracks, each of the plurality of tracks defining a track width, and wherein each of the first and second normal burst fields and each of the first and second quadrature burst fields spans a radial extent that is greater than half of the track width.

3. (Original) The disk drive of claim 1, wherein the second quadrature burst field is contiguous with the first quadrature burst field.
4. (Original) The disk drive of claim 1, further comprising a write transducer having a write transducer width and wherein a width of the first and second normal burst fields and a width of the first and second quadrature burst fields are dictated by the write transducer width.
5. (Original) The disk drive of claim 1, wherein the first and second normal burst fields and the first and second quadrature burst fields are not trimmed after being written to the disk by the write transducer.
6. (Original) The disk drive of claim 1, wherein the first and second normal burst fields and the first and second quadrature burst fields are trimmed after being written to the disk by the write transducer.
7. (Canceled).
8. (Original) The disk drive of claim 1, wherein the disk is configured to enable the sampled servo system controller to determine a servo correction signal that includes a servo correction magnitude and a servo correction direction from a reading of only two circumferentially adjacent servo burst fields.
9. (Original) The disk drive of claim 1, wherein the difference between the first phase and the second phase is about 90 degrees.
10. (Original) The disk drive of claim 1, wherein each of the first and second normal burst fields is circumferentially adjacent to at least one of the first and second quadrature burst fields.

11. (New) A disk drive having a sampled servo system controller and a disk wherein the disk has a read transducer and a plurality of servo burst fields, the plurality of servo burst fields comprising:

a first normal burst field;

a first quadrature burst field, a portion of the first quadrature burst field being circumferentially contiguous with the first normal burst field and spanning a portion of a radial extent of the first normal burst field;

a second normal burst field, the second normal burst field being radially aligned with and away from the first normal burst field, the second normal burst field spanning a portion of a radial extent of the first quadrature burst field, and

a second quadrature burst field, the second quadrature burst field being radially aligned with and away from the first quadrature burst field, the second quadrature burst field spanning a portion of a radial extent of the second normal burst field,

wherein the first normal burst field and the first quadrature burst field have a same first phase, the second normal burst field and the second quadrature burst field have a same second phase, a difference between the first phase and the second phase is less than 180 degrees; and

wherein the sampled servo system controller includes a Discrete Fourier Transform (DFT) - type demodulator coupled to the read transducer, the DFT-type demodulator being configured to generate a servo correction signal that includes a servo correction magnitude and a servo correction direction from a phase information derived from the first normal and first quadrature burst fields read by the read transducer.

12. (New) The disk drive of claim 11, wherein the disk defines a plurality of tracks, each of the plurality of tracks defining a track width, and wherein each of the first and second normal burst fields and each of the first and second quadrature burst fields spans a radial extent that is greater than half of the track width.

13. (New) The disk drive of claim 11, wherein the second quadrature burst field is contiguous with the first quadrature burst field.
14. (New) The disk drive of claim 11, further comprising a write transducer having a write transducer width and wherein a width of the first and second normal burst fields and a width of the first and second quadrature burst fields are dictated by the write transducer width.
15. (New) The disk drive of claim 11, wherein the first and second normal burst fields and the first and second quadrature burst fields are not trimmed after being written to the disk by the write transducer.
16. (New) The disk drive of claim 11, wherein the first and second normal burst fields and the first and second quadrature burst fields are trimmed after being written to the disk by the write transducer.
17. (New) The disk drive of claim 11, wherein the disk is configured to enable the sampled servo system controller to determine a servo correction signal that includes a servo correction magnitude and a servo correction direction from a reading of only two circumferentially adjacent servo burst fields.
18. (New) The disk drive of claim 11, wherein the difference between the first phase and the second phase is about 90 degrees.
19. (New) The disk drive of claim 11, wherein each of the first and second normal burst fields is circumferentially adjacent to at least one of the first and second quadrature burst fields.

**REMARKS**

Claims 1-10 are pending in the present Applications. Applicant kindly thanks the Examiner for the indication that Claim 7 is objectionable as being dependent on a rejected claim but that it would be allowable if rewritten in independent form including all of the limitations of the base claim. Claim 1 is rejected under 35 U.S.C. §112, first paragraph, for failing to enable a person skilled in the art to make or use the invention. Claims 1-6 and 8-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 6,034,835 issued to Serrano ("Serrano") in view of U.S. Pat. No. 6,366,423 issued to Ahn ("Ahn"). Applicants respectfully traverse these rejections and request reconsideration and allowance of the pending claims.

**NEW CLAIMS:**

Applicant adds independent Claim 11 and dependent Claims 12-19. All new claims are fully supported by the specification as originally filed. Independent Claim 11 includes all of the limitations of now-cancelled Claim 7 and should therefore be allowable based on the Examiner's indication of allowable subject matter. Claims 12-19 depend on Claim 11 and are allowable for at least that reason. Accordingly, Applicant respectfully requests consideration and allowance of new Claims 11-19.

**AMENDMENTS TO THE CLAIMS:**

Applicant amend Claim 1 to correct a typographical error in the preamble and to clarify that "the second normal burst field and the second quadrature burst field have a same second phase." The Examiner correctly discerned that the claimed limitations did not match the description in the specification. The error was due to an inadvertent typographical error, and based on the description provided in the specification, it should be clear that the amendment to Claim 1 is simply intended to correct an apparent error rather than to change the scope of the claim. As the amended claim language now conforms to the specification, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. §112 that Claim 1 is not enabled.

REJECTION UNDER 35 USC 103(a):

The Examiner rejects independent Claim 1 as being obvious over *Serrano* in view of *Ahn*. Claim 1 recites "wherein the first normal burst field and the first quadrature burst field have a same first phase, the second normal burst field and the second quadrature burst field have a same second phase, a difference between the first phase and the second phase is less than 180 degrees." Specifically, the Examiner asserts that the quoted limitations are shown in *Serrano* by the use of servo bursts A, B, C, and D to form quadrature signals  $P = A-C$ ,  $-P = C-A$ ,  $Q = B-D$ , and  $-Q = D-B$ , with servo bursts A and B having the same phase and servo bursts C and D having the same phase (*Serrano*, col. 6, ll. 25-55, and Fig. 3). But contrary to the Examiner's assertion, the servo bursts A, B, C, and D of *Serrano* do not show the recited burst fields of Claim 1. In *Serrano*, quadrature signals are generated by bursts of different *frequencies*, which are related to one another so as to produce signal P, Q, -P, and -Q that are 90 degrees out of phase with one another (col. 6, ll. 42-44). *Serrano* teaches nothing about the phase relationship between burst pair A/B and burst pair C/D, and moreover, because the respective burst pairs have differing frequencies, there would be no common frequency between the pairs to even speak of a phase difference between them. Even more pointedly, *Serrano* would teach away from introducing any phase shift into either burst pair that would disturb the frequency relationship between the bursts that is used to generate quadrature signals from the bursts. Thus, *Serrano* not only fails to teach each and every limitation recited in Claim 1 but also teaches away from modifying the servo bursts A, B, C, and D to produce the recited phase relationship. Nor does *Ahn* provide any additional teaching, hint, or suggestion of the recited limitations that are missing from *Serrano*, much less any motivation to modify the teaching of *Serrano* to produce the recited combination of limitations.

For at least the foregoing reasons, *Serrano* and *Ahn*, whether taken separately or in combination with one another, fail to render Claim 1 obvious. Claims 2-6 and 8-10 depend directly or indirectly on Claim 1 and are allowable for at least that reason. Accordingly, Applicant respectfully requests reconsideration and allowance of Claims 1-6 and 8-10.

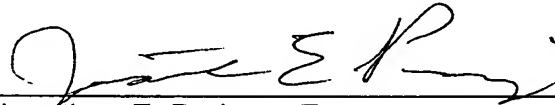
## CONCLUSION

In view of the foregoing amendments and/or remarks, Applicant respectfully submits that the pending claims are now in condition for allowance and requests reconsideration of the rejections. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to contact the undersigned attorney at the number listed below.

The Commissioner is hereby authorized to charge payment of any required fees associated with this Communication or credit any overpayment to Deposit Account No. 23-1209.

Respectfully submitted,

Date October 27, 05

By:   
Jonathan E. Prejean, Esq.  
Reg. No. 52,132

WESTERN DIGITAL TECHNOLOGIES, INC.  
20511 Lake Forest Drive  
Lake Forest, CA 92630  
Tel.: (949) 672-7000  
Fax: (949) 672-6604